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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/630,924 | 07/31/2003 | Shao-Jen Lim | 046006-0305310 | 7578 |

570 7590 10/19/2006

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| EXAMINER |
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SINGH, RAMNANDAN P

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| ART UNIT | PAPER NUMBER |
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2614

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/630,924

Applicant(s)

LIM ET AL.

Examiner

Ramnandan Singh

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-18, drawn to driver circuits, classified in class 375, subclass 257, as shown in Figures. 2, 4, 7, and 9-11.
 - II. Claims 19-23, drawn to control signal generators, classified in class 375, subclass 259, as shown in Figures 12, 13 and 15.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01).

In the instant case, the different inventions are unrelated because of the following:

 - a. Invention I is directed towards low voltage differential signaling driver circuits including a current source, a current sink, and a current steering circuit configured to provide current to a load.
 - b. Invention II is directed towards control signal generators to generate control signals having delayed timings.

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3. Applicant's response filed on Aug. 10, 2006 confirmed the election of Group I containing claims 1-18. As a result, non-elected claims 19-23 are cancelled. Hence, this restriction is made FINAL.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Morgan et al [US 20030210074 A1].

Regarding claim 1, Morgan et al teach a circuit for signal transmission shown in Fig. 3, the circuit comprising:

a current source (I_{source}) [Figs. 3-4];
a current sink (I_{sink}) having a current control terminal [Figs. 3-4];
a current steering circuit (200) having a pair of output nodes, the current steering circuit being arranged to receive current from the current source and to pass current to the current sink, and the current steering circuit being configured to provide a differential signal to a load connected across the output nodes; and

a control circuit (112) including a voltage regulator, the voltage regulator being configured to produce a regulated voltage based on a comparison between a reference voltage and an offset voltage, wherein the current control terminal of the current sink is arranged to receive the regulated voltage [Figs. 3-6 ; Para: 0003; 0005-0006; 0011; 0016-0017; 0028-0030; 0039; claims 1-8].

Regarding claim 2, Morgan et al further teach the circuit for signal transmission, wherein the current steering circuit (200) includes two switches, each switch having an input node and one of the pair of output nodes and being configured to provide current to the respective output node or to receive current from the output node according to a potential at the input node [Figs. 3-4].

Regarding claim 3, Morgan et al further teach the circuit for signal transmission, wherein each switch of the current steering circuit includes a first transistor and a second transistor, and wherein the first transistor of each switch is configured and arranged to conduct current in response to a high potential at the respective input node and to be substantially nonconductive in response to a low potential at the respective input node, and wherein the second transistor of each switch is configured and arranged to conduct current in response to a low potential at the respective input node and to be substantially nonconductive in response to a high potential at the respective input node [Figs. 4-5; Para: 0028-0029].

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan et al as applied to claims 1, 2 above.

Regarding claim 4, Morgan et al do not teach expressly using a switch with two Transistors, one PMOS and another NMOS.

Since Morgan et al teach using switches based transistors [Figs. 3-6], it would have been obvious to one of ordinary skill in the art at the time the invention was made to accommodate each switch of the current steering circuit including a first transistor and a second transistor, and wherein each first transistor is a PMOS transistor and each second transistor is an NMOS transistor subject to circuit, system and design constraints.

Claims 5-9 are rejected for the reasons stated above in claim 4.

Allowable Subject Matter

8. Claims 10-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Hedberg [US 6,307,402] teaches a differential signaling scheme based on switches having PMOS and NMOS transistors [Figs. 2a-2c, 3; Abstract]; and

(ii) McCall et al [US 5,656,952 A] teach all-MOS differential high speed driver [Whole document].

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh
Examiner
Art Unit 2614

A handwritten signature in black ink, appearing to be 'Rng' with a long horizontal stroke extending to the right.